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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/987,131	11/13/2001	Yasukazu Nihei	Q66555	6334

7590 11/03/2003  
SUGHRUE, MION, ZINN, MACPEAK & SEAS, PLLC  
2100 Pennsylvania Avenue, N.W.  
Washington, DC 20037-3202

EXAMINER
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LEE, JOHN D

ART UNIT	PAPER NUMBER
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2874

DATE MAILED: 11/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 09/987,131	Applicant(s) NIHEI, YASUKAZU	
	Examiner John D. Lee	Art Unit 2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

#### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All   b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                               | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>0202,0302</u> | 6) <input type="checkbox"/> Other:  |

Receipt is acknowledged of papers submitted under 35 U.S.C. §§ 119(a)-(d), which papers have been placed of record in the file.

The six (6) sheets of formal drawing filed on November 13, 2001, are acceptable.

The abstract of the disclosure is objected to because in line 2 thereof, "is" should be "are", and in line 6 thereof, "both of" should be "to both". Correction is required. See MPEP § 608.01(b).

The specification has not been checked to the extent necessary in order to identify all possible informalities. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claims 1 and 9 are objected to because of the following minor informalities. In claim 1, line 5, "electrode" (singular) should actually be "electrodes" (plural); and in claim 9, line 2, "ferroelectric" (singular) should actually be "ferroelectrics" (plural).

The following is a quotation of the second paragraph of 35 U.S.C. § 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-9 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Lines 7-8 of claim 1 indicate that an electric field is applied to *both front and back surfaces of the ferroelectric crystal via electrodes*, but the claim previously indicated that *electrodes were only formed on one of the surfaces* of the crystal. It is thus unclear how the electric field can be applied to both crystal surfaces without electrodes being formed on both surfaces (as in claims 3 and 4), and the claim is accordingly indefinite. Since claims 2-9 are all ultimately dependent upon claim

1, they all inherently contain the same indefiniteness. Also, in line 2 of claim 2, there is no antecedent basis for the term “the electrode groups”, since the term is actually introduced further along in claim 2. Further, in lines 6-7 of claim 9, there is no antecedent basis for the term “the periodic polarization inversion structure” when this claim is alternatively dependent on claims 3, 5, and 7. Still further, in line 8 of claim 9, there is no antecedent basis for the term “the electrode groups” when this claim is alternatively dependent on claims 3, 5, and 7.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-9 are further rejected under 35 U.S.C. § 102(b) as being clearly anticipated by U.S. Patent 5,594,746 to Harada, submitted by applicant. Harada discloses a polarization inversion method for ferroelectrics (and a method of fabricating optical wavelength conversion devices using such polarization inversion method) that is identical to the method broadly stated in these claims. Notice that Harada forms a plurality of electrodes (which can be in any pattern, including “groups”) on a first surface of a ferroelectric crystal that already possesses a single polarization (“unipolarized”), disposes a corona wire about a second, opposite, surface of the ferroelectric crystal, and then forms local polarization inversion portions in the crystal by applying an electric field between the opposite surface electrodes. The ferroelectric crystal can be  $\text{LiNbO}_3$  doped with  $\text{MgO}$ .

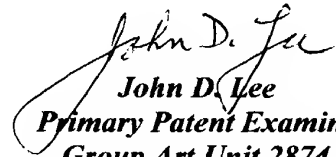
Claims 1, 2, 5, 6, 9/2, 9/5, and 9/6 are further rejected under 35 U.S.C. § 102(b) as being clearly anticipated by U.S. Patent 6,002,515 to Mizuuchi et al. Mizuuchi et al also discloses a polarization inversion method for ferroelectrics (and a method of fabricating optical wavelength conversion devices using such polarization inversion method) that is identical to the method broadly stated in these claims. Mizuuchi et al forms a plurality of electrodes (which can be in any pattern, including "groups") on a first surface of a ferroelectric crystal that already possesses a single polarization, disposes another electrode on a second, opposite, surface of the ferroelectric crystal, and then forms local polarization inversion portions in the crystal by applying an electric field between the opposite surface electrodes. See Figures 1 and 2. The ferroelectric crystal can be, for example, LiTaO<sub>3</sub> doped with MgO or LiNbO<sub>3</sub> doped with MgO.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Other related electrode-based polarization inversion methods in singly polarized ferroelectrics can be seen in the cited U.S. Patents to Agostinelli et al, Yamaguchi et al, Deacon et al, and Furukawa et al, and in the cited U.S. Patent Application Publication to Furukawa et al.

All of the prior art documents submitted by applicant in the Information Disclosure Statements filed on February 13, 2002 (including the Harada reference relied on in the rejection above) and March 13, 2002, have been considered and made of record. Note the attached initialed copy of forms PTO-1449.

Any inquiry concerning the merits of this communication should be directed to Examiner John D. Lee at telephone number (703) 308-4886. The Examiner's normal work schedule is Tuesday through Friday, 6:30 AM to 5:00 PM. Any inquiry of a

general or clerical nature (i.e. a request for a missing form or paper, etc.) should be directed to the Technology Center 2800 receptionist at telephone number (703) 308-0956, to the technical support staff supervisor (Team 2) at telephone number (703) 308-3072, or to the Technology Center 2800 Customer Service Office at telephone number (703) 306-3329.

  
**John D. Lee**  
**Primary Patent Examiner**  
**Group Art Unit 2874**